REMARKS

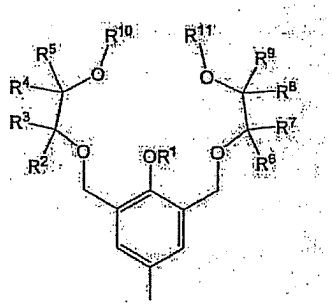
Claims 1-7 are currently pending in this application.

Claim 1 has been amended to clarify that the optically active substituent is linked to the polymer main chain and is conjugated with the polymer main chain. This amendment is supported at page 12, line 24 – page 13, line 6.

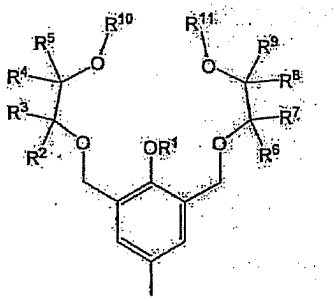
The optically active substituent having chirality recognition ability toward primary amines forms a complex selectively with either the R-form or the S-form of amines and acids and derivatives thereof and causes an electron and/or energy transfer from the receptor site (i.e., the optically active substituent) to the polymer main chain, which results in a quenching of the fluorescence. This is discussed at page 14 of the present specification.

Claims 1-7 have been rejected under 35 U.S.C. §103(a) as being obvious over Kim et al., "Ion-Specific Aggregation in Conjugated Polymers: Highly Sensitive and Selective Fluorescent Ion Chemosensors", *Angew. Chem. Int. Ed.* (2000) 39, No. 21, 3868-3872 in view of Naemura et al., "Temperature Dependent Reversal of Enantiomer Selectivity in the Complexation of Optically Active Phenolic Crown Ethers With Chiral Amines", Chem. Commun. (1996) 2749-2750.

With respect to claim 1, the Office Action alleges that Kim et al. discloses a fluorescent molecular wire comprising a polymer main chain having a linked conjugated system to which an optically active substituent is linked so as to be in conjugated form (See equations 1-3; page 3869/col. l). The Office Action acknowledges, however, that Kim et al. does not disclose the optically active substituent represented by the following formula:



The Office Action contends that Naemura et al. discloses the optically active substituent (See equation 4; page 2749/col. 2):



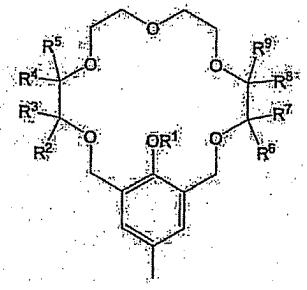
where R^1 represents a hydrogen atom; R^2, R^3, R^4, R^6, R^7 and R^8 represent, independently, hydrogen atoms; R^5 and R^9 represent methyl groups; and R^{10} and R^{11} represent a bonded alkyl group with an oxygen heteroatom.

Kim et al. and Naemura et al. allegedly are analogous because both references are directed toward chemosensors having crown ethers bonded to conjugated systems.

The Office Action contends that it would have been obvious to one having ordinary skill in the art at the time of the invention to use the optically active substituent of Naemura et al. in the fluorescent molecular wire of Kim et al. because it is an obvious variation of the optically active substituent of Kim et al., wherein both substituents are capable of sensing chiral compounds or metal ions.

With respect to claims 2-4, the Office Action contends that Kim et al., at equations 1-3, page 3869/col. 1, allegedly discloses the fluorescent molecular wire wherein the polymer main chain has a linked conjugated system that is a polyarylene structure or a polyphenylene structure.

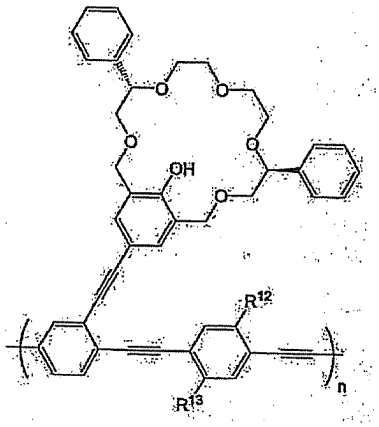
With respect to claim 5, the Office Action contends that the combined teachings of Kim et al. and Naemura et al., as discussed above, allegedly disclose the fluorescent molecular wire wherein the optically active substituent is represented by the following formula (See Naemura; equation 4, page 2749/col. 2):



where R^1 represents a hydrogen atom: R^2, R^3, R^4, R^6, R^7 and R^8 represent, independently,

hydrogen atoms; and R^5 and R^9 represent methyl groups.

With respect to claim 6, the Office Action contends that the combined teachings of Kim et al. and Naemura et al., as discussed above, allegedly disclose the fluorescent molecular wire represented by the following formula (See Naemura et al.; equation 4; page 2749/col. 2; and Kim et al.; equations 1-3, page 3869/col. 1):



where R^{12} and R^{13} represent, independently, methoxy groups, methyl groups or isopropyl groups.

With respect to claim 7, the Office Action contends that the combined teachings of Kim et al. and Naemura et al., as discussed above, allegedly disclose a chiral sensor comprising a molecular wire (See Naemura et al.; paragraph 1 and equation 4, page 2749; see Kim et al.; equation 1-3, page 3869/col. 1).

Applicants respectfully traverse the Section 103(a) rejection and request that the rejection be reconsidered and withdrawn.

As reiterated by the Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. ___, 82 U.S.P.Q.2d 1385 (2007), the framework for the objective analysis for determining obviousness under 35 U.S.C. §103 is stated in *Graham v. John Deere*. Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*, 72 Fed. Reg., No. 195 (October 10, 2007) at page 57527 (hereinafter "Examination Guidelines"). The factual inquiries enunciated by the Court are as follows:

(1) Determining the scope and content of the prior art;

(2) Ascertaining the differences between the claimed invention and the prior art; and

(3) Resolving the level of ordinary skill in the pertinent art.

Examination Guidelines at page 57527.

Kim et al. fails to suggest or disclose that the crown ether is conjugated with the polymer main chain. Polymers 1-3, shown at page 3869, do not have conjugate bonds between the crown ether and the polymer main chain. In the title "Ion-specific aggregation in conjugated polymers: Highly sensitive and selective fluorescent ion chemosensors", Kim et al. merely discloses that the chemosensor requires the aggregation of polymers. According to Kim et al., the fluorescence quenching that is a sensory response is a result of the interpolymer stacking aggregations. Thus, as shown by polymers 1 to 3 on page 3869 and scheme 1 on page 3870 in Kim et al., the chemosensor of Kim et al. does not require conjugation between the crown ether and the polymer main chain. Furthermore, the sensing reaction in Kim et al. must be performed under conditions in which the polymers can aggregate.

On the other hand, the fluorescent molecular wire of the present invention does not require the aggregation of polymers. In the present invention, the sensing reaction is performed under the condition where the receptor site (i.e., the optically active substituent) can form a complex with a primary amine. Thus, the fluorescent molecular wire of the present invention is totally different from the chemosensor of Kim et al.

Naemura at al. does not cure this deficiency of Kim et al. Naemura at al. merely discloses that the enantiomer selectivity in the complexation of optically active phenolic crown with chiral amines is reversed depending on temperature. Naemura et al. fails to describe the use of an optically active phenolic crown in a chemosensor.

Even if the optically active phenolic crown of Naemura et al. is used in the fluorescent molecular wire of Kim et al., such a fluorescent molecular wire is expected to function by aggregation of the wires. Therefore, one having ordinary skilled in the art would not have been motivated to conjugate the optically active phenolic crown of Naemura et al. with the fluorescent molecular wire of Kim et al. In addition, it would not have been obvious to one having ordinary skill in the art to increase not only sensitivity but also chirality recognition ability by introducing the above-described structural feature into the polymer main chain having a linked conjugated system.

Accordingly, since Kim et al. and Naemura at al., combined as set forth in the Office Action, fail to suggest or disclose at least one element of independent claim 1, the cited combination of Kim et al. and Naemura at al. do not obviate these claims. Claims 2-7

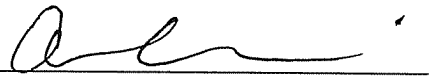
depend from claim 1 and are not obvious over the disclosures of Kim et al. and Naemura at al., combined as set forth in the Office Action, for at least the same reasons as discussed above with respect to claim 1. Applicants respectfully request reconsideration and withdrawal of the Section 103 rejection of claims 1-7.

Reconsideration of the rejections and allowance of pending claims 1-7 are respectfully requested. The undersigned respectfully requests that the Examiner contact her with any questions regarding this Amendment, in an effort to move this case towards allowance.

Respectfully submitted,

THE WEBB LAW FIRM

Date March 30, 2009

By 

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